



**BAR CODE MED ADMIN
(BCMA)**

NVS Troubleshooting Manual

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TABLE OF CONTENTS

1	OVERVIEW	1
	1.1 What is BCMA?	1
	1.2 Features of BCMA	1
	1.3 Intranet Documentation	1
2	ABOUT THIS MANUAL	2
3	GLOSSARY	2
	3.1 Acronyms	2
	3.2 Definitions	2
4	TROUBLESHOOTING PROBLEMS AND SOLUTIONS	3
	4.1 Pharmacy	3
	4.2 Nursing	6
	4.3 IRM.....	10
	4.4 General	14
	INDEX	15

1 OVERVIEW

1.1 What is BCMA?

BCMA software is a point-of-care solution for validating the administration of medications. The initial software development and hardware research done at the Eastern Kansas Health Care System, Colmery-O'Neil Division, VISN 15, Heartland Veterans Health Network, is the basis from which the standard product is being built. The existing software functionality, in addition to enhancements identified by a functional workgroup with Nursing and Pharmacy representatives from various Veterans Integrated Services Networks (VISNs), is being replicated with a graphical user interface (GUI) (MS Windows-based) client/server architecture.

Automation of the medication administration process will improve medication administration accuracy and increase the efficiency of documentation. As each patient wristband and medication is scanned by a bar code reader, the software will validate that the medication is ordered, timely, and in the correct dosage—as well as electronically update the medication administration history. BCMA software offers a tool to augment, not replace, the clinical judgment of the medication administrator.

1.2 Features of BCMA

BCMA:

- Increases medication administration accuracy
- Captures drug accountability data
- Increases the information available to Nursing staff at the patient point of care
- Reduces wasted medications
- Improves communication between Nursing and Pharmacy staffs
- Provides a real-time Virtual Due List (VDL) of orders for medication administration
- Records refused medications
- Records missing doses and sends the requests electronically to the Pharmacy
- Provides a point-of-care data entry/retrieval system
- Provides full compatibility with the existing **VISTA** system
- Identifies PRN entries that require effectiveness comments
- Replaces the manual Medication Administration Record (MAR) with a Medication Administration History (MAH) to provide an automatic record of a patient's medication administration information
- Provides a list of variances that identify early or late medication administrations and late PRN effectiveness entries

1.3 Intranet Documentation

Documentation for this product can now be found on the Intranet at the following address:

<http://www.vista.med.va.gov/bcma>

At this address is information about BCMA, including background, technical information, and important user documentation.



Remember to bookmark this site for future reference.

2 ABOUT THIS MANUAL

This manual seeks to answer commonly asked technical questions that may be encountered by National **VISTA** Support (NVS) or IRM personnel. The questions and answers are organized by Pharmacy, Nursing, IRM, and General, and are presented in an easy-to-use table format.

3 GLOSSARY

This section contains acronyms and definitions for terms used in this document.

3.1 Acronyms

BCMA	Bar Code Med Admin
CHUI	Character-based User Interface
CPRS	Computerized Patient Record System
GUI	Graphical User Interface
IEN	Internal Entry Number
PC	Personal computer
PRN	Pro Re Nata [Latin]
VA	Department of Veterans Affairs
VAMC	Veterans Affairs Medical Center
VDL	Virtual Due List
VISTA	Veterans Health Information Systems and Technology Architecture

3.2 Definitions

BCMA	A VISTA software application that will validate medications against active orders prior to being administered to the patient.
CPRS	A VISTA software application that provides an integrated patient record system for use by clinicians, managers, quality assurance staff, and researchers.
Given	When a medication is administered to the patient, it is considered Given.
IEN Drug Code	The internal drug number (IEN) that is entered into Inpatient Medications V. 5.0
Not Given	A medication that is intentionally Not Given for a specified reason.
PRN	Latin abbreviation for <i>pro re nata</i> meaning “as needed.”
VA FileMan	VISTA ’s database management system.
VDL	The Virtual Due List is a GUI application used by nurses when administering medications.

4 TROUBLESHOOTING PROBLEMS AND SOLUTIONS

4.1 Pharmacy

Problem	Explanation/Solution
When I use the Drug File Inquiry option, will it recognize synonyms from the DRUG File (#50) fields? I was unable to pull a synonym for an IV Piggy Back and I'm not sure why?	The Drug File Inquiry option will not recognize a synonym from the IV Additives file. It will however, recognize synonyms from DRUG File (#50). The Drug File Inquiry option will accept any of the following entry formats: drug IEN code , generic name, Federal Supply Number (FSN), VA product name, national drug class (NDC), ATC mnemonic, or synonym.
Are there tools for the Pharmacy to use when cleaning up DRUG File (#50)?	FileMan can be used in conjunction with an Excel or other spreadsheet database to clean up DRUG File (#50). Drug File maintenance is extremely important for all pharmacy packages. The process should be ongoing and is especially important for CPRS. There are no options within BCMA to identify duplicate drug entries or similarities. This is solely a function of the Pharmacy Data Management Menu.
How are bar codes read into the Synonym field of the Pharmacy prescription file? Can hold an object data type to store the bar code, or is the information transferred just as a number?	Use the Drug/Enter Edit option under Pharmacy Data Management to enter synonyms into DRUG File (#50). You may use this synonym field to enter trade names and quick codes for drug item look-up. For the purposes of BCMA, this field is used to scan a manufacturer's bar code or Universal Product Code (UPC) label to create a quick code look-up for the drug product. Do not enter bar codes into this field manually.

Problem	Explanation/Solution
I am getting e-mail messages generated by a new NDC patch (V4.0*14). Do these messages have anything to do with the BCMA software?	National Drug File V. 4.0 allows the National Drug File (NDF) information database to be updated electronically each time a new drug product is created and released by a manufacturer. These e-mail messages will be sent to you each time new information is added to the NDF software by Pharmacy Benefits Management. It is solely supported by Pharmacy Benefits Management and the NDF functionality. More information on handling these e-mail messages is available in the NDF V. 4.0 Users Manual. These e-mail messages have nothing to do with the BCMA software.
How do I handle liquid doses?	One option is to draw up oral syringes for all liquid dosages and label them with the Zebra unit, but this may be too labor intensive for some pharmacies. Most liquids have the manufacturers bar coded NDC number on them. These can be scanned as synonyms into the drug file to negate the need for additional Zebra labeling. If liquids are kept as bulk stock on the wards and the nurse actually pours the amount of medication to be administered, the pharmacy could possibly enter 4mg=2ml into the dosage ordered field during order entry. That way the nurse would know how much to pour. In addition, when a liquid dosage is scanned, a pop-up box appears and requires the nurse to enter the amount given. The nurse will need to review the order on the VDL and enter the corresponding amount administered into the pop-up box field.
Is there a way to have the Message field from the IV package (as it currently prints on the IV labels) show on the VDL?	Information entered into the Other Print Information field during IV order entry will print on the VDL and on the CHUI Due List.
When will I be prompted for an amount given?	Anytime a medication is administered that was not ordered as a TAB or CAP, you will be prompted for the amount given.

Problem	Explanation/Solution
How does the BCMA software handle the fill-on-request order type used for narcotics and for multi-dose packages such as inhalers?	Fill-on-request orders are compatible with BCMA. BCMA simply looks at the order and tries to find PRN in the schedule. If it does not find PRN in the schedule, it then looks for administration times, and places the order accordingly on the VDL.
How long does an order with a schedule type of R (fill-on-request) and a schedule of once show up on the due list?	An order with schedule type R will remain on the due list until the Stop/Date Time of the order. Once is not an appropriate schedule for a Fill-on-Request schedule type. Schedule types that are One-Time will drop off the VDL after the medication is scanned as Given, or marked as Held or Refused; and the VDL screen is refreshed or closed. If the schedule is once, now, or stat, the schedule type must be One-Time.
If the order is for Lorazepam 1-2mg Q6H PRN, what do I put in the quantity field, 1mg or 2 mg or 1 tab?	Dosage ranges may be entered into the dosage ordered field. In this example the dosage ordered could be entered as 1-2mg. The Units per Dose field should contain a 2 for the above order (i.e. The maximum allowable units per dose). This allows the nurse to administer either 1mg or 2mg. If this method is used all reports will be an accurate reflection of the actual dose administered.
How do I order and dispense medications that patients self-administer?	This is a local policy decision. One way to do this is to order and dispense medications using the Outpatient Pharmacy package, but also enter the medications into the Inpatient Medications V. 5.0 package. When patients self administer their medications, they initial their own doses on a 7-day Medication Administration Record (MAR). Medications are not scanned unless a nurse administers them.
How will Last Given display on the VDL if the dispense drug has changed since the last administration?	The Last Given is based on the Orderable Item. If the Orderable Item is the same, it will list the last administration

4.2 Nursing

Problem	Explanation/Solution
What orders will display on the VDL?	All orders entered within Inpatient Medications V. 5.0 will appear on the VDL. This includes any order entered through the Unit Dose or IV Module, as long as the patient is an inpatient.
When I tried to log into the BCMA application I received the message “The BCMA application is not active for this site!” Why am I getting this message?	There is a BCMA site parameter that can be used (typically by IRM personnel) to take the application offline for a particular division. Most likely, you received that message because you tried to log on while BCMA was temporarily offline. When BCMA is offline, users that are currently logged into the GUI VDL option will not be affected.
The patient record I tried to access was locked by another user. Why is it locked? How can I unlock it?	When you access a patient’s record in BCMA, the record is locked so another user cannot edit the record at the same time. The record cannot be accessed from the GUI VDL, the CHUI Manual Med Entry, the CHUI Edit Med Log, or the PRN Effectiveness Comment option when another user is editing it. Users may <u>view</u> CHUI reports for this patient while a patient record is locked. The patient record will be unlocked after the other user has closed the patient record.
Do I have to select the drug (by highlighting the drug on the VDL) before I can scan the bar code for that medication?	The drug that you are scanning for administration does <u>not</u> have to be highlighted on the VDL. After the medication bar code is scanned, BCMA determines if the order is on the VDL for this patient. If BCMA does not find a match, a message will display telling the user that the scanned drug was not found in the VDL.

Problem	Explanation/Solution
What do I do if the bar code label is missing or unreadable?	There is a menu option available on the VDL that gives the drug name and the IEN code from DRUG File (#50). On the VDL menu bar, click on the Due List option. Select Drug IEN Code from the drop-down menu. The IEN will display. Enter the number manually in the Scan Medication Bar Code field of the VDL. This method should only be used when the bar code label is missing or unreadable.
How will an order appear on the VDL if the provider orders a non-standard administration time?	If the order entry method is compatible with the electronic MAR provided within the Inpatient Pharmacy V. 5.0 package, and the order appears correctly on the electronic MAR, the order will appear correctly on the VDL.
Why do I have to scan twice for a two-tablet dose?	This allows the nurse to specify the dosage Given at the time the medication is scanned.
How do I document the administration of a half-tablet?	This is a local facility process issue, but the following unit dose packaging and labeling procedure should be considered for half-tablet dosage forms: Pharmacy should dispense all oral solid doses in a form that is ready for patient administration. If half-tablets are required, Pharmacy should dispense these items in a half-tablet form that is clearly labeled. All half-tablet dosages have the same IEN or NDC number as whole tablet doses, unless a new entry is created in DRUG File (#50).
How do I record code carts or other emergency meds?	The BCMA software allows the nurse to create a manual entry using the Manual Medication Entry function within the VISTA menu. This manual entry can be made against any order that displays on the patient's profile. As long as the order is entered within Inpatient Medications V. 5.0, it can be logged as Given at the time it was actually given, using the Manual Medication Entry option. These orders may also be given from the GUI VDL with the appropriate comments.

Problem	Explanation/Solution
What notification do I receive when the physician places a medication on hold?	After the med pass is complete, print the Missed Medications report. Any orders that were placed on hold by the provider through CPRS or by Pharmacy through Inpatient Medications V. 5.0 will show HOLD printed next to the order. Remove Hold orders from the Missed Medications report by making a Manual Medication Entry. In this way, the nurse can document (acknowledge) that the order was in fact on hold and was not given.
When do renewed orders show up on the VDL?	<p>When an order is renewed in CPRS, the default start date/time is determined by Inpatient Medications V. 5.0 site parameters for that ward.</p> <p>The Inpatient Medications V. 5.0 site parameter will determine how that order is handled when it is finished. If NOW is used, the old order will continue to display on the VDL until it is finished, at which time the Inpatient Medications V. 5.0 software will place the stop date/time into the old order. For example, if the new order has a start date/time of 0930 and the administration time was 0900, the new order will not display on the VDL, because it did not start until after the scheduled administration time. The old order will print on the Missed Medications report to signify that an active order did exist for that administration time. A manual medication entry is required to remove it from the list.</p> <p>NOTE: It is recommended that sites use NOW as the default parameter.</p>
Why are IVs displaying on the VDL for all administration times?	Currently, BCMA can only mark IVs as Started, Held, or Refused. BCMA does not check for administration times.

Problem	Explanation/Solution
How can I enter effectiveness for medications other than PRNs?	Comments may be entered for any administration. On the VDL, highlight an order. On the menu bar, click on the Due List option. A drop-down menu will display. If the order status is Given, Held, or Refused, you will be able to select Comment from the drop-down menu. A window will open. Enter a comment and click on the OK button. For more information, see the BCMA V. 1.0 GUI Options Manual.
I gave my On-Calls and they are still showing up on the VDL. When do they drop off the list?	After On-Calls are marked as Given, they will remain on the VDL until the screen is refreshed or the patient record is closed. A site parameter can be set to allow On-Call orders to be scanned multiple times, if the order start and stop dates/times are not the same. If the site parameter for On-Call is set to multiple, the On-Call order will continue to display on the VDL until the order expires.
How can I see the complete order when I am in the GUI VDL?	With your mouse, double click on the drug on the VDL to display the complete order.

4.3 IRM

Problem	Explanation/Solution
What is the contingency plan if the computer goes down?	This is a local facility decision, but the contingency plans most often rely on a paper back-up or a parallel system such as Oracle. Colmery O'Neil VAMC spools a 24-hour MAR from Inpatient Medications V. 5.0 to a standalone PC at midnight each night. The MAR can be printed on a moment's notice and delivered to the ward for emergency back-up, if system problems interfere with administering medications using BCMA. An example of this contingency plan is located on the BCMA Project Notebook.
Will existing bar code wristband printers print a durable wristband?	The Phoenix beta site tested a Zebra wristband that seemed to be more durable than most. Contact Zebra to find a distributor near you, or check this Web site for Zebra printer and product information: http://www.amerbar.com/catalog/05.html
Where can I obtain a copy of the FSS contract to upgrade our ATC machine?	The Federal Supply Schedule (FSS) contract is very informative for the ATC upgrades. There are several different models. The bar code upgrade package for the old units and the upgrade costs are listed in contract FSS V797P-3726J Supplement 15. For information, call Auto-Med (the company that bought out Baxter) at 1-800-323-4315. Select the customer service option, and ask for a copy of the FSS contract to be faxed to you.
Are there precautions we can take to protect the data in case of a system crash?	Yes. You MUST set both Before and After Image Journaling for the ^PSB global. Refer to Step 3 of section 3.1 of the Installation check list in the Installation Guide if you need further information.
I installed the BCMA software, but I can't get the application to run. What else do I need to install?	Please check the Installation Guide for install requirements. This will give you the list of package version requirements and patches that are required for the installation of BCMA. It is available on the BCMA Project Notebook at: http://www.vista.med.va.gov/bcma

Problem	Explanation/Solution
Are there any new globals with the BCMA software?	There is a new global, ^PSB. This global <u>must</u> be placed with the appropriate protection assigned to it before installing the KIDS build.
I tried to set up the optional command line parameter for the BrokerServer, but it was being ignored. Why?	Parameters S (BrokerServer) and P (serverport) are a set, which means that they must both be present or they will be ignored.
How can I direct the error log for the GUI application to another directory?	The command line parameter to redirect the log file to an alternate directory is L=(<i>DOS path location</i>). The default directory is C:/Temp. There is also a command line parameter--/nologfile--to turn off the log file.
What clock is the application using for administration times?	The system will compare the client clock (date/time) with the server clock (date/time) at application start-up. If there is a difference greater than the PSB SERVER CLOCK VARIANCE parameter value, a warning message will display. All client date/time calculations will be based on the client clock plus a client-server increment. The server clock variance can be set in either the GUI parameters or in CHUI. See the BCMA V. 1.0 Manager Manual at http://www.vista.med.va.gov/bcma for additional information.
What are the requirements for laptops and scanners? What additional equipment is needed?	The requirements depend upon the number of inpatient areas using BCMA. In general, three laptops and three scanners for each ward are considered the minimum. Each facility also requires printers for wristbands, bar code labels, and missing dose requests. See the BCMA Project Notebook at http://www.vista.med.va.gov/bcma for additional information.

Problem	Explanation/Solution
The scanners on the wards don't read the patients' wristbands, even though Pharmacy has entered all the medication bar codes.	Because there is no universal nomenclature for bar code readers, the scanners in Nursing and Pharmacy must be synchronized. Both Nursing and Pharmacy must use the same brand and model of scanner, and each scanner must be configured exactly the same way. To check that the scanners work together, first use the Pharmacy scanner to scan in a bar code as a synonym. Then, using the scanner on the ward for BCMA, scan the bar code again. If the numbers match exactly, the scanners in both locations are properly configured.
How do I set up the requirement for electronic signatures?	Electronic signatures may be established by using the Kernel option, Electronic Signature code Edit (XUSESIG). In Kernel V.8.0, the Electronic Signature code Edit (XUSESIG) option has been tied to the Common Options under the User's Toolbox (XUSERTOOLS) submenu for easy access by all users.
Why are the parameters on the VDL different from the default site parameters?	When a user alters the default setting for certain fields (such as Start and Stop Time, Schedule Type, and Column Sort Selection) on the VDL, the settings are retained in the user parameters and become the default each time the user logs onto the system. NOTE: The Reset User Parameters utility in the CHUI application allows for user-selected parameters to be reset to site-defined parameters. See the BCMA V. 1.0 Manager Manual for more information.

Problem	Explanation/Solution
How can I determine why a medication is not displaying on the Virtual Due List?	The Trouble Shoot Med Log utility in the CHUI application can help determine why specified medications do not display on the VDL. A standard FileMan look-up occurs and a list of orders display on the screen. The user selects an order, and the system displays the order number, orderable item, and scheduled administration time. The system then asks if this is the correct order and for the administration time. After the administration time is selected, a message is displayed concerning this medication and administration time. The report can be displayed on the screen. See the BCMA V. 1.0 Manager Manual for more information.
Does my site have to be running CPRS in order to use the BCMA software?	Facilities must have CPRS <u>installed</u> prior to using the BCMA software. CPRS does not have to be running on all wards in order for facilities to use the BCMA software.

4.4 General

Problem	Explanation / Solution
How can I document narcotic wastage by the anesthesia provider?	There is no drug accountability in BCMA V. 1.0. Your facility should continue its current method of documenting wastage.
How can I document the administration of blood products?	BCMA does not document the administration of blood products. BCMA is designed for medication administration.
Where does a provider see BCMA information in <i>VISTA</i>?	The provider can be assigned the appropriate <i>VISTA</i> menu options (for instance, Medication Log).

INDEX

- Administration time
 - Non-standard, 7
 - Server clock versus client clock, 11
- Amount given, 4
- ATC, 3, 10
- Bar code labels, missing or unreadable, 7
- Bar code wristband printers
 - Zebra, 10
- Bar codes
 - Printing, 10
 - Scanning, 6
 - Synonyms, 3
- BCMA installation requirements, 10
- Blood products, 14
- CHUI reports, 6
- Contingency plan, 10
- CPRS, 2, 3, 8, 13
- Dispense drug, 5
- DRUG File (#50), 3, 7
- Drug File Inquiry, 1, 3
- Effectiveness comments, 9
- Electronic signature requirements, 12
- Emergency medications, 7
- Error log, 11
- Federal Supply Schedule for ATC upgrades,
 - 1, 2, 10
- Inpatient Medications V. 5.0, 2, 5, 6, 7, 8, 10
- IRM, 2, 6, 10
- IV, 3, 4, 6
- Laptops, 11
- Last Given, 5
- Log-in problems, 6
- Lorazepam, 5
- Medications
 - Dosage ranges, 5
 - Half-tablet dose, 7
 - Hold orders, 8
 - Liquid doses, handling, 4
 - On-Call orders, 9
 - Renewed orders, 8
 - Two-tablet dose, 7
- Missed Medications report, 8
- Narcotics, 14
- National Drug File, 4
- Orderable item, 5
- Outpatient Pharmacy, 5
- Parameters, system, 11, 12
- Pharmacy Benefits Management, 4
- Pharmacy Data Management, 3
- Printers, 10, 11
- Scanners, 11, 12
- Schedule types
 - Fill-on-request, 5
 - One-Time, 5
- Self-administered medications, 5
- Software Globals, 11
- Synonyms, 3, 4
- Trouble Shoot Med Log utility, 13
- Unit Dose, 2, 7
- Virtual Due List, 1, 2, 4, 5, 6, 7, 8, 9, 12, 13
- VISTA**, 2, 3, 7, 14
- Wristbands, 1, 10, 11, 12